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ULTRA-SLIM TYPE PHOTOELECTRIC SENSOR **Inflection resistant cable type**

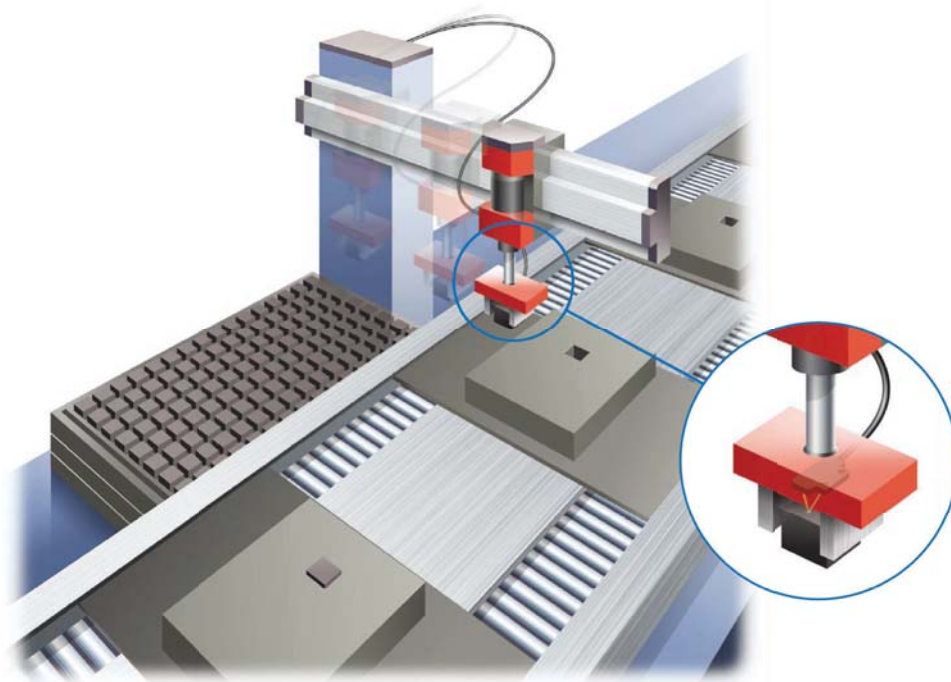
**New**

# EX-10-R SERIES



## Suitable for moving parts!

Inflection resistant cable type is now available



### Ten Times Greater Inflection Resistance

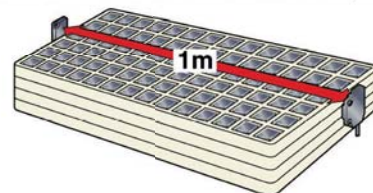
EX-10-R series has ten times greater inflection resistance. It is most suitable for moving parts, such as robot arm, etc.

### Long Sensing Range: 1m (EX-19□-R)

A sensing range of 1m has been realized with a slim size of just 3.5mm. It can be used to detect even wide IC trays.

### Flexible Mounting

The diffuse reflective type sensor is front sensing and is so thin that it gives an impression of being just pasted on the mounting base. The thru-beam type sensor is available as front sensing type, as well as, side sensing type, allowing flexible mounting.



Diffuse reflective  
 · Front sensing type



Thru-beam  
 · Front sensing type



· Side sensing type



### Smallest Body, Just 3.5mm Thick

It can be mounted in a very small space as its size is just W10 × H14.5 × D3.5mm (thru-beam, front sensing type).



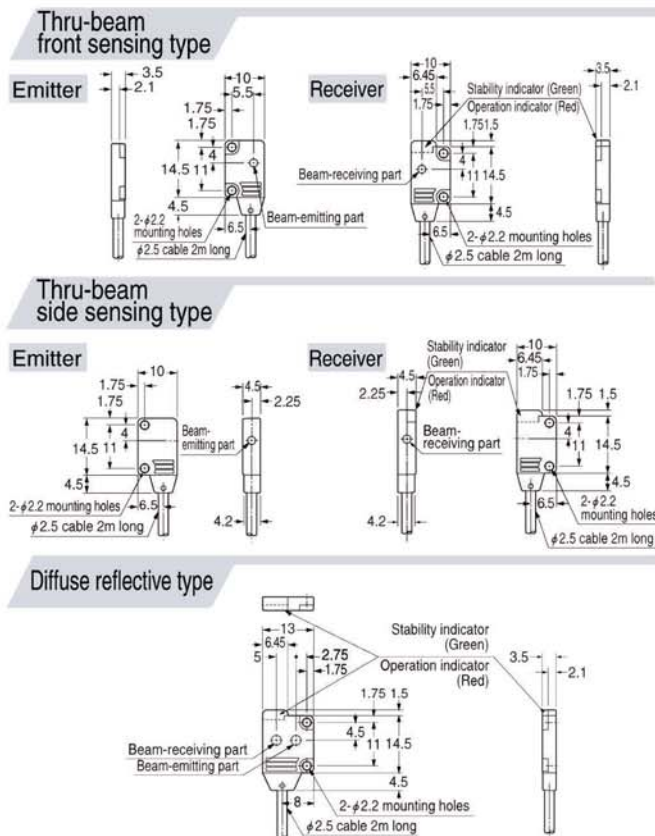
Actual size

# SPECIFICATIONS

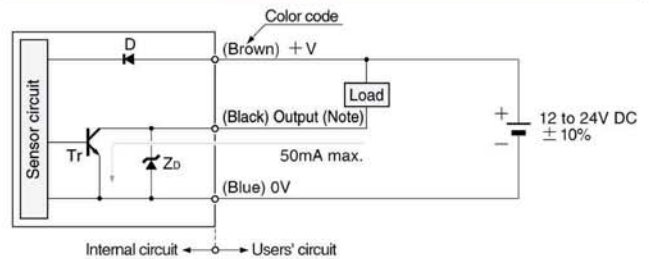
Item	Type		Thru-beam					Convergent reflective
			Front sensing	Side sensing	Front sensing	Side sensing	Front sensing	Front sensing
	Model No.	Light-ON	EX-11A-R	EX-11EA-R	EX-13A-R	EX-13EA-R	EX-19A-R	EX-14A-R
		Dark-ON	EX-11B-R	EX-11EB-R	EX-13B-R	EX-13EB-R	EX-19B-R	EX-14B-R
Sensing range			150mm		500mm		1m	2 to 25mm (Note 2) (Conv. point: 10mm)
Min. sensing object			φ 1mm opaque object (Setting distance between emitter and receiver: 150mm)		φ 2mm opaque object (Setting distance between emitter and receiver: 500mm)		φ 2mm opaque object (Setting distance between emitter and receiver: 1m)	φ 0.1mm copper wire (Setting distance: 10mm)
Hysteresis								15% or less of operation distance
Supply voltage	12 to 24V DC ± 10% Ripple P-P10% or less							
Output	NPN open-collector transistor <ul style="list-style-type: none"> <li>Maximum sink current: 50mA</li> <li>Applied voltage: 30V DC or less (between output and 0V)</li> <li>Residual voltage: 1V or less (at 50mA sink current) 0.4V or less (at 16mA sink current)</li> </ul>							
Response time	0.5ms or less							
Protection	IP67 (IEC)							
Accessories	Mounting screws: 2 sets						Mounting screws: 1 set	

Note: Please refer to EX-10 series catalog or sensor general catalog for more details specifications and options.

## DIMENSIONS (Unit: mm)



## I/O CIRCUIT DIAGRAM



Note: The emitter of the thru-beam type sensor does not incorporate the output.

Symbols ... D : Reverse supply polarity protection diode  
 Z<sub>D</sub>: Surge absorption zener diode  
 Tr: NPN output transistor

## PRECAUTIONS FOR PROPER USE



This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

All information is subject to change without prior notice.



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